What is claimed is:

1. A data communications system in which a transmitting
side relay device and a receiving side relay device
5   are connected to a first and second networks,
respectively, where a prescribed transfer unit is
consecutively transferred at a specific transfer rate
and with prescribed transfer delay, and a data stream
generated as a series of the transfer units are
10   communicated as a series of datagram type packets,
including the transfer unit, via a third network,
    said transmitting side relay device, comprising:
      an additional information generation unit
generating additional information, including
15   information about relationship between each transfer
unit and the data stream based on the characteristics
of the data stream;
      a packet generation unit generating a packet by
attaching both the additional information and header
20   information suited to be transferred in the third
network when each transfer unit composing the data
stream is inputted; and
      a transmitting unit transmitting the packet to
the third network according to prescribed procedures,
25   and

said receiving side relay device, comprising:

a separation unit separating the additional information and a transfer unit which are included in the packet received from the third network;

5　　　an analysis unit analyzing the additional information separated by the separation unit;

a reproduction unit locating information that is included in the transfer unit received from the separation unit in a correct position of the data stream

10　and reproducing the data stream based on an analysis result by the analysis unit; and

an outputting unit outputting the data stream reproduced by the reproduction unit to the second network.

15

2.The data communications system according to claim 1, wherein said additional information generation unit generates additional information, including a sequence number for indication of a transmitting order

20　of each transfer unit.

3.The data communications system according to claim 1, wherein said additional information generation unit generates additional information, including a time

25　stamp for indicating a transmission time of each

transfer unit.

4.The data communications system according to claim 1, wherein a data stream transferred in the first and second networks has a prescribed cyclical structure, and

said additional information generation unit generates additional information, including a cycle to which each transfer unit belongs and a number for indicating an order in the cycle based on the cyclical structure that is possessed by the data stream.

5.the data communications system according to claim 1, wherein a data stream transferred in the first and second networks is digital video data, and

said additional information generation unit generates additional information, including both a frame number for indicating each video frame composing the digital video data and a data block number for indicating a data block composing the video frame.

6.The data communications system according to claim 1, wherein a data stream transferred in the first and second networks is composed of transfer units obtained by arranging a plurality of types of different unit

information in a prescribed format, and

said additional information generation unit generates information, including type information about a type of unit information included each of the

5   transfer unit.

7.The data communications system according to claim 1, wherein a data stream transferred in the first and second networks is digital video data, and

10   said additional information generation unit generates   additional   information,   including information   about   combination   between   video information unit and audio information unit that are included in each transfer unit.

15

8.The data communications system according to claim 1, further comprising

a generation control unit controlling a generating operation of a packet corresponding to each

20   transfer unit when a transmission mode is inputted, and wherein said additional information generation unit generates additional information, including information about a process content of each transfer unit instructed by said generation control unit.

25

9.The data communications system according to claim 8, wherein a data stream transferred in the first and second networks is digital video data, and

said generation control unit judges whether

5   respective pieces of audio and video data, which are elements composing digital video data of each frame, should be designated as data to be transmitted depending on a transmission mode and instructs packet generation unit to generate a packet; selectively including the

10   data to be transmitted, and

said additional information generation unit generates additional information, including information about a type of data to be transmitted.

15   10.The data communications system according to claim 9, wherein said generation control unit designates only audio data included each transfer unit or only a transfer unit, including audio data, as a transmission target and instructs a packet generating operation of

20   the transmission target when a transmission mode for indicating that audio data included in digital video data should be transmitted.

11.The data communications system according to claim

25   8, further comprising

a transmitting control unit controlling a transmission rate used when said transmitting unit transmits a packet, including each transfer unit, to make a prescribed transmission rate corresponding to

5 a transmission mode when the transmission mode is inputted.

12. A data communications system according to claim 1, wherein said transmitting unit comprises

10 a transmitting unit sequentially transmitting each packet inputted as a packet to be transmitted to the third network; and

a target input unit inputting each packet generated by said packet generation unit to the

15 transmitting unit as a packet to be transmitted and also inputting packets generated by duplicating a part of the packets as packets to be transmitted.

13. The data communications system according to claim

20 12, wherein immediately after inputting a packet to be repeatedly transmitted to said transmitting unit as a transmission target, said target input unit repeatedly inputs the packets to the transmitting unit as packets to be transmitted as many times as required.

25

14. The data communications system according to claim 12, wherein a data stream transferred in the first and second networks has a prescribed cyclical structure, and

5   said target input unit stores in advance one data stream cycle of copies of packets to be repeatedly transmitted and inputs the copies of the packets to be repeatedly transmitted to said transmitting unit after inputting packets corresponding to all transfer

10   units composing one cycle of data stream.

15. The data communications system according to claim 12, wherein a data stream transferred in the first and second networks has a prescribed cyclical structure,

15   and

said target input unit stores in advance all packets generated by said packet generation unit and the copies of packets to be repeatedly transmitted of one cycle of data streams and inputs all the stored

20   packets to said transmitting unit at a random order.

16. The data communications system according to claim 1, wherein said reproduction unit of a receiving side relay device comprises:

25   a receiving buffer, which is structured to make

a multi-dimension array consisting of elements with prescribed data length, for storing each transfer unit separated by said separation unit in a storage place corresponding to a designated element; and

5   a writing control unit generating a write instruction for indicating a corresponding element of the multi-dimension array composing said receiving buffer based on the analysis result of additional information corresponding to each of the transfer unit

10 composing said receiving buffer.

17. The data communications system according to claim 16, wherein a data stream transferred in the first and second networks has a prescribed cyclical structure,

15 and

said receiving buffer has a multi-dimension array structure corresponding to the cyclical structure of the data stream.

20 18. The data communications system according to 16, wherein said additional information generation unit of a transmitting side relay device generates additional information, including a sequential number for indicating a transmission order of each transfer

25 unit, and

said reproduction unit of receiving side relay device comprises:

a first evaluation unit evaluating integrity of data stored in said receiving buffer
5   based on continuity of sequence numbers that is included in additional information separated from each packet that reaches said receiving side relay device; and

a compensation unit compensating for data
10   stored in said receiving buffer based on an evaluation result on integrity of data stored in said receiving buffer.

19. The data communications system according to claim
15   16, wherein a data stream transferred in the first and second networks is composed of transfer units obtained by arranging a plurality of types of different unit information in a prescribed format,

said additional information generation unit
20   generates additional information, including type information about a type of unit information that is included in each of the transfer unit and

said reproduction unit of the receiving side relay device comprises:

25   a counter unit classifying transfer units

included in each packet that reaches said receiving side relay device for each unit information based on an analysis result of additional information separated from each packet;

5   a second evaluation unit evaluating the integrity of data stored in said receiving buffer based on a counting result of the counter unit; and

         a compensation unit compensating for data
10   stored in said receiving buffer based on an evaluation result of integrity of data stored in said receiving buffer.

20. The data communications system according to claim
15   19, wherein a data stream transferred in the first and second networks is digital video data, and

      said counter unit classifies packets, including the audio information unit of digital video data.

20   21. The data communications system according to claim 19, wherein a data stream transferred in the first and second networks is digital video data, and

      said counter unit classifies and counts packets, including video information data of digital video data.

25

22. The data communications system according to claim 19, wherein a data stream transferred in the first and second networks is digital video data, and

said counter unit classifies and counts packets, including header information of digital video data.

23. The data communications system according to claim 19, wherein said compensation unit comprises:

a compensation information storage unit storing appropriate compensation information for each transfer unit; and

a composition unit composing a data stream consisting of a series of transfer units by selecting either each transfer unit stored in said receiving buffer or corresponding compensation information based on an evaluation result of said second evaluation unit.

24. The data communications system according to claim 16, wherein said receiving side relay device comprises:

a delay amount storage unit storing a prescribed delay amount; and

a target determination unit receiving position information about a position in an original data stream occupied by the relevant transfer unit as an analysis

result of additional information separated from the latest arrival packet, determining a list of a series of transfer units to be reproduced by said reproduction unit as a unit of size of an array composing said receiving buffer based on a result obtained by subtracting the delay amount from the position information and designating the relevant array for said reproduction unit.

25. The data communications system according to claim 24, wherein a data stream transferred in the first and second networks is digital video data,

said additional information generation unit of said transmitting side relay device generates additional information, including a frame number for indicating each video frame composing the digital video data,

said receiving buffer stores a transfer unit, including information composing each frame, as each element of an array in relation to a plurality of video frames,

said delay amount storage unit stores a prescribed number of frames as a delay amount and

said target determination unit receives the frame number from said analysis unit as position

information and determines an array to be reproduced based on both this frame number and the prescribed number of frames.

5   26. The data communications system according to claim 24, wherein said additional information generation unit of said transmitting side relay device generates additional information, including a time stamp for indicating a transmission time of each transfer unit,

10   said delay amount storage unit stores a prescribed time as a delay amount, and

said target determination unit receives the time stamp from said analysis unit as position information and determines an array to be reproduced based on both

15   a time indicated by this time stamp and the delay time.

27. The data communications system according to claim 24, wherein said receiving side relay device comprises a modification unit modifying the delay amount stored

20   in said delay amount storage unit when a modify instruction is inputted.

28. The data communications system according to claim 1, wherein each of said transmitting and receiving side

25   relay devices comprises a control communications unit

transmitting/receiving a control packet in a prescribed format via the third network.

29. The data communications system according to claim 28, wherein said transmitting side relay device comprises:

a generation control unit controlling a generating operation of a packet corresponding to each transfer unit when a transmission mode is inputted;

a transmitting control unit controlling a transmission rate used when said transmitting unit transmits a packet, including each transfer unit, to the third network to make a prescribed transmission rate corresponding to a transmission mode when the transmission mode is inputted; and

a management information analysis unit analyzing management information that is included in a control packet received via said control communications unit of a self-device and inputting an appropriate transmission mode to both the generation control unit and the transmitting control unit based on this analysis result, and

said receiving side relay device comprises:

a management information collecting unit collecting management information about quality

of a data stream received by the self-device via the third network based on an analysis result obtained by said analysis unit or information about a reproduction process of said

5   reproduction unit and transmitting the information to said transmitting side relay device as a control packet via said control communications unit of the self-device.

10   30.A data communications system where a transfer unit in a prescribed format transferred in a first network, which is one of a plurality of physically independent networks is relayed by a transmitting side relay unit installed in relation to the first network, another

15   relay network and a receiving side relay unit in relation to a second network, which is at least one of other independent networks,

said transmitting side relay unit comprises:

an extraction unit extracting a transfer

20   unit to be transmitted to the second network;

a transformation unit applying a prescribed operation to control information included in the extracted transfer unit and generating a relay transfer unit;

25   a reshaping unit reshaping the relay

transfer unit into a packet in a format based on transmitting procedures of the relay network, that is addressed to said receiving side relay device installed in relation to the second

5   network; and

        a first transmitting unit outputting each packet reshaped by the reshaping unit to the relay network, and

the receiving side relay unit comprises:

10   a separation unit breaking down the packet received via the relay network and separating the relay transfer unit from the packet;

        a generation unit applying a prescribed operation to the relay transfer unit obtained

15   by the separation unit and re-generating a transfer unit, including control information suitable for a transmission process in the second network; and

        a second transmitting unit transmitting

20   the transfer unit generated by the generation unit to the second network.

31. The data communications system according to claim 30, wherein said transformation unit of said

25 transmitting side relay unit comprises a first

rewriting unit rewriting at least a part of control information included each transfer unit and outputting the transfer unit as a relay transfer unit.

5   32. The data communications system according to claim 31, wherein each transfer unit transferred in the first and second networks includes time information required to synchronize transfer operations as a part of control information, and

10   said first rewriting unit replaces time information included in each transfer unit with invalid data neglected in a transfer process of the second network.

15   33. The data communications system according to claim 30, wherein said generation unit of said receiving side relay unit comprises a second rewriting unit rewriting at least a part of control information included in each relay transfer unit into information suitable for the

20   second network and outputting the transfer unit as a transfer unit to be transmitted to the second network.

34. The data communications system according to claim 33, wherein each transfer unit transferred in the first

25   and second networks includes time information required

to synchronize transfer operations as a part of control information, and

said second rewriting unit replaces information about a transmission time included in control

5   information with time information valid in a network of self-device side.

35.The data communications system according to claim 33, wherein each transfer unit transferred in the first

10   and second networks includes channel identification information about the transmission route as a part of control information, and

said generation unit comprises a storage unit storing correspondence information about

15   correspondence between channel identification information assigned on the first network side and channel identification information assigned on the second network in each communications conducted between a node belonging to the first network and a

20   node belonging to the second network via a relay network, and

said rewriting unit rewrites channel identification information included in a relay transfer unit based on the correspondence information.

25

36. The data communications system according to claim 30, wherein each transfer unit transferred in the first and second networks includes a prescribed fixed information as a part of control information for each 5 of the transmission routes,

said transformation unit of said transmitting side relay unit comprises a deletion unit deleting the fixed information and outputting the transfer unit as a relay transfer unit, and

10 said generation unit of said receiving side relay unit comprises addition unit attaching the fixed information to each relay transfer unit as a part of corresponding control information and outputting the transfer unit as a transfer unit to be transmitted to 15 the second network.

37. The data communications system according to claim 30, wherein a series of transfer units transferred in the first and second networks are composed of valid 20 transfer units, including information to be transferred and empty transfer units, including no information to be transmitted, and

said reshaping unit of a transmitting side relay unit comprises:

25 a first selection unit selecting valid

transfer units, including information to be transferred as a transmission target to be transmitted to a relay network; and

5   a conversion unit converting the selected transfer unit to be transmitted into a packet suitable for a relay network.

38. The data communications system according to claim 37, wherein said second transmitting unit of said
10   receiving side relay unit comprises:

a transmitting unit transmitting the transfer unit received as a transmission target to the second network; and

an insertion unit inserting an empty transfer
15   unit, including no information to be transferred, in the series of transfer units received from said generation unit according to prescribed rules and inputting the series of transfer units to said transmitting unit as a transfer unit string to be
20   transmitted.

39. The data communications system according to claim 30, wherein a series of transfer units transferred in the first and second networks are composed of valid
25   transfer units, including information to be

transferred, and empty transfer units, including no
information to be transmitted, and

said reshaping unit of a transmitting side relay
unit comprises:

5   a second selection unit selecting all
transfer units or a valid transfer unit,
including information to be transferred, as a
transmission target when a select instruction
is inputted; and

10   a conversion unit converting the transfer
unit selected as a transmission target into a
packet suitable for a relay network.

40. The data communications system according to claim
15 30, wherein said reshaping unit of said transmitting
side relay unit comprises:

a third selection unit identifying a correct
transfer unit based on conditions to be met by a transfer
unit in the first network and selecting the transfer
20 unit as a transmission target to be transmitted to a
relay network; and

a conversion unit converting the transfer unit
selected as a transmission target into a packet suitable
for the relay network.

25

41. The data communications system according to claim 30, wherein each of the first and second networks selects a route node from nodes belonging to a respective network and this route node manages transmission in the respective network when a prescribed operation is performed, and

each of said transmitting and receiving side relay unit comprises:

a judgment unit judging whether a self-device is designated as a route node when a prescribed operation is performed; and

a resetting unit performing the prescribed operation if the judgment unit judges that the self-device is a route node.

42. The data communications system according to claim 30, wherein the first network confirms delivery of asynchronous transfer units transmitted from each node belonging to the network to another node from time to time by a prescribed reply transfer unit, and

said transmitting side relay unit comprises a reply acting unit returning a transfer unit equivalent to the prescribed reply transfer unit to an originating node of the asynchronous transfer unit in reply to an asynchronous transfer unit extracted by said

extraction unit.

43. The data communications system according to claim 30, wherein each of a plurality of independent networks assigns a node number to each node belonging to the network when a prescribed operation is performed,

said transmitting side relay unit comprises:

a first node number storage unit storing both identification information peculiar to each node belonging to the first network, and correspondence between an invariable virtual node number of each node belonging to the first network and a node number assigned in the first network; and

a first number update unit collecting a node number assigned to each node in the first network and updating a content of the first number storage unit when a prescribed operation is performed,

said transformation unit replaces a node number that is included in the transfer unit extracted by said extraction unit as information about a transmitting source with a corresponding virtual node number stored in the first number storage unit,

said receiving side relay unit comprises:

a second number storage unit storing both identification information peculiar to each node belonging to the second network, and correspondence between an invariable virtual

5   node number of each node belonging to the second network and a node number assigned in the second network; and

a second number update unit collecting a node number assigned to each node in the second

10   network and updating a content of the second number storage unit when a prescribed operation is performed, and

said generation unit replacing the virtual node number included in a relay transfer unit as information

15   about a destination with a corresponding node number stored in the second number storage unit.

44.A data communications system where a transmitting side relay unit installed in relation to a first network,

20   which is one of a plurality of physically independent networks for transferring structure data with a prescribed regular structure in prescribed transfer units, transmits a transfer unit transferred in the first network to another relay network and a receiving

25   side relay unit installed in relation to a second

network, which is at least one of the plurality of independent networks, relays the transfer unit transmitted to the relay network to the second network, said transmitting side relay unit comprising:

5   a generation unit generating a datagram type relay packet, including the transfer unit, and addressed to the receiving side relay unit when a transfer unit transferred in the first network is inputted; and

10   a transmitting unit transmitting the relay packet to the relay network, and said receiving side relay unit comprises:

a decomposition unit breaking down the relay packet received via the relay network and

15   separating the transfer unit;

a reproduction unit reproducing structure data using the transfer unit obtained by the decomposition unit based on information about the prescribed regular structure to be possessed

20   by the structure data; and

an outputting unit outputting the structure data to the second network in the prescribed transfer units.

25   45.The data communications system according to claim

44, wherein digital video data are transferred in the prescribed transfer units in the plurality of independent networks,

said reproduction unit of said receiving side
5   relay unit comprises:

a detection unit detecting information about a head of a video frame included in the inputted transfer unit;

a regeneration unit regenerating one video
10   frame of structure data from the transfer unit received from said decomposition unit during a cycle from when the head of the video frame is detected by said detection unit until a head of a subsequent video frame is detected;

15   a collection unit collecting regeneration information about an information amount included in the structure data regenerated by said regeneration unit based on a transfer unit inputted to said regeneration unit;

20   an evaluation unit evaluating integrity of the structure data regenerated by said regeneration unit based on both the detection result of the detection unit and the regeneration information; and

25   a result output unit outputting the

structure data regenerated by the regeneration unit as a reproduction result when the evaluation of said evaluation unit is obtained.

5   46. The data communications system according to claim 45, wherein said collection unit comprises counter unit counting a number of transfer units inputted to said regeneration unit during a cycle from when from a head of a video frame is detected until a head of a subsequent

10   video frame is detected and sequentially outputting regeneration information, including this counter value, and

said evaluation unit comprises first judgment unit monitoring a counter value included in the

15   regeneration information, and judging that the structure data regenerated by said regeneration unit is incomplete when the counter value exceeds a prescribed threshold value and outputting the judgment as an evaluation result.

20

47. The data communications system according to claim 45, wherein said collection unit comprises a measurement unit measuring an information amount that is included in the structure data regenerated by said

25   regeneration unit based on both the detection result

of said detection unit and information about data length that is included in each transfer unit inputted to said regeneration unit and outputting regeneration information, including this measurement result,

5   said evaluation unit comprises:

an estimation unit estimating a number of transfer units contributing to a regeneration process of said regeneration unit based on the measurement result included in said regeneration

10   information; and

a second judgment unit judging whether an information amount lost when said regeneration unit regenerates structure data, is allowable, based on a comparison result between the

15   estimation result of said estimation unit and the prescribed threshold value and outputting this judgment result as an evaluation result, and

said result output unit outputs the structure

20   data regenerated by said regeneration unit as a valid reproduction result and provides the result for an output process to the second network of said output unit.

25   48.The data communications system according to claim

44, wherein digital video data are transferred in prescribed units in the plurality of independent networks,

said reproduction unit of said receiving side
5 relay unit reproduces structure data in units of video frames using the transfer unit received from said decomposition, and

said output unit comprises:

a first storage unit storing one video
10 frame of the structure data reproduced by said reproduction unit;

a second storage unit storing one video frame of structure data to be transmitted by said transmitting unit;

15 a transmitting unit transmitting each transfer unit stored in the second storage unit to the second network according to prescribed procedures;

a third judgment unit referring to the
20 first storage unit and judging whether new structure data are stored, every time said transmitting unit transmits one video frame of structure data; and

an input unit inputting the structure data
25 stored in the first storage unit to the second

storage unit, based on a judgment result of the third judgment.

49. The data communications system according to claim 44, wherein digital video data are transferred in prescribed transfer units in the plurality of independent networks,

said transmitting side relay unit comprises:

a frame counter unit counting video frames transferred as structure data in the first network; and

a generation control unit controlling both stop and restart of a packet generating operation of said generation unit.

50. The data communications system according to claim 49, wherein said transmitting unit of said transmitting side relay unit comprises:

a packet storage unit storing a series of packets generated by said generation unit;

an interval calculation unit calculating a transmission interval when the packets should be transmitted to a relay network based on a thinning-out ratio designated by a thin-out instruction; and

a packet output unit sequentially extracting

packets stored in the packet storage unit and transmitting the packets to a relay network at each of the transmission intervals.

5   51. A system for conducting communications using a plurality of network routes with different communications delay, comprising:

       a transmitting unit transmitting a plurality of split communications data with additional information

10   for split communications;

       a receiving unit uniting, synchronizing and receiving the plurality of split communications data based on the additional information.

15   52. The system according to claim 51, wherein the network is the Internet and the communications data is video data.

     53. The system according to claim 51, wherein

20   each of a plurality of senders has said transmitting unit, exchanges information about the additional information among the senders and transmits communication data after attaching additional information with regularity unified among the

25   plurality of all senders.

54. The system according to claim 51, wherein
each of a plurality of senders has said transmitting
unit, independently transmits communications data and
5   each of a plurality of receivers having said receiving
unit synchronizes and receives communications data by
exchanging   information   about   the   additional
information among the receivers.

10   55. The system according to claim 51, wherein
each of a plurality of senders has said transmitting
unit, independently transmits communications data,
each of a plurality of receivers having said receiving
unit comprises a synchronization unit adjusting a
15   synchronization state by observing a reproduction
state of receiving data and secures synchronization
of   communications   data   by   adjusting   the
synchronization by said synchronization unit.

20   56. The system according to claim 51, wherein
the additional information is one of a channel number
of   communications   data,   an   origination   time   of
communications   data   and   a   generation   time   of
communications data.

25

57. The system according to claim 51, wherein existence/non-existence of specific data, such as voice, pictures, etc., or information about a specific pattern is used for the additional information.

58. The system according to claim 51, wherein said transmitting unit divides communications data into a plurality of split data and transmits the split data via a plurality of network routes.

59. The system according to claim 51, wherein the division is dynamically conducted based on network information.

60. The system according to claim 51, wherein the network information is collected two or more times consecutively and it is judged whether a division method should be modified, by comparing at least two pieces of the collected network information.

61. The system according to claim 60, wherein difference between the at least two or more pieces of network information is expressed as a numeric value and a division method is modified if the numeric value is equal to or more than a threshold value.

62. The system according to claim 59, wherein either a packet loss ratio or a packet data amount passing through each network interface is used for the

5   network information.

63. A transmitting device used in a system for communicating via a plurality of network routes with different communications delay, comprising

10   a transmitting unit transmitting a plurality of pieces of split communications data with additional information for split communications, including information required to synchronize on a receiving side, via the plurality of network routes.

15

64. A receiving device used in a system for communicating via a plurality of network routes with different communications delay, comprising

      a receiving unit uniting and synchronizing a

20   plurality of split communications data based on additional information required to synchronize on a transmitting side.

65. A method for communicating via a plurality of network

25   routes   with   different   communications   delay,

comprising:

transmitting a plurality of split communications data with additional information for split communications via the plurality of network routes; and

uniting, synchronizing and receiving a plurality of split communications data based on the additional information.

66. The method according to 65, wherein the network is the Internet and the communications data is video data.

67. The method according to 65, wherein each of a plurality of senders executes the transmitting step, exchanges information about said additional information among the senders, attaches additional information with regularity unified among the plurality of all transmitters and transmits to communications data transmitted by each sender.

68. The method according to claim 65, wherein each of a plurality of senders executes the transmitting step, independently transmits communications data and a plurality of receivers executing the receiving step

synchronizes and receives the communications data by exchanging information about the additional information among the receivers.

5   69. The method according to claim 65, wherein each of a plurality of senders executes the transmitting step, independently transmits communications data, and each of a plurality of receivers executing said receiving step further comprises a synchronization

10   step adjusting a synchronization state by observing a reproduction state of receiving data and secures synchronization of communications data by making an adjustment in the synchronization step.

15   70. The method according to claim 65, wherein the additional information is one of a channel number of communications data, an origination time of communications data and a generation time of communications data.

20

71. The method according to claim 65, wherein either existence/non-existence of specific data, such as voice, pictures, etc., or a specific pattern is used for the additional information.

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72. The method according to claim 65, wherein in the transmitting step, communications data is divided into a plurality of pieces of split data and is transmitted via a plurality of network routes.

73. The method according to claim 72, wherein the division is dynamically conducted based on network information.

74. The method according to claim 73, wherein the network information is collected two or more times consecutively and it is judged whether a division method should be modified by comparing at least two pieces of the collected network information.

75. The method according to 73, wherein difference between the at least two or more pieces of network information is expressed as a numeric value and a division method is modified if the numeric value is equal to or more than a threshold value.

76. The method according to claim 73, wherein either a packet loss ratio or a packet data amount passing through each network interface is used for the network information.